
215.73

Pediatric Growth Charts

Overview

Policy

A single plot of height-for-age and weight-for-age allows you to compare the child's height and weight to children of the same age and sex. A length-for-weight chart or a BMI-for-age chart provides information about the child's proportions. Continued use of the growth chart provides a visual portrayal of the child's growth pattern. This policy describes how to calculate a child's age and BMI and how to plot and evaluate pediatric growth charts.

In this policy

This policy covers the following topics.

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Calculating A Child's Age

Introduction The data system will calculate a child's age in months in order to plot the growth charts. This section describes how to manually calculate age.

Procedure The data system calculates a child's age as described in the table below. Follow these steps if you must manually calculate a child's age.

Step	Action	Example 1																
1	Write child's birth year, month and day under year, month and day of clinic visit.	<table><tr><td></td><td><u>Year</u></td><td><u>Month</u></td><td><u>Day</u></td></tr><tr><td><u>Visit date</u></td><td>18</td><td>7</td><td>15</td></tr><tr><td><u>Birthdate</u></td><td>16</td><td>7</td><td>20</td></tr></table>		<u>Year</u>	<u>Month</u>	<u>Day</u>	<u>Visit date</u>	18	7	15	<u>Birthdate</u>	16	7	20				
	<u>Year</u>	<u>Month</u>	<u>Day</u>															
<u>Visit date</u>	18	7	15															
<u>Birthdate</u>	16	7	20															
2	Subtract birthdate from clinic visit date. <u>Note:</u> Borrow 30 days from the month column or 12 months from the year column if needed.	<table><tr><td></td><td><u>Year</u></td><td><u>Month</u></td><td><u>Day</u></td></tr><tr><td><u>Visit date</u></td><td>18 17</td><td>7 6 18</td><td>15 45</td></tr><tr><td><u>Birthdate</u></td><td>16</td><td>7</td><td>20</td></tr><tr><td><u>Child's age</u></td><td>1</td><td>11</td><td>25</td></tr></table>		<u>Year</u>	<u>Month</u>	<u>Day</u>	<u>Visit date</u>	18 17	7 6 18	15 45	<u>Birthdate</u>	16	7	20	<u>Child's age</u>	1	11	25
	<u>Year</u>	<u>Month</u>	<u>Day</u>															
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<u>Birthdate</u>	16	7	20															
<u>Child's age</u>	1	11	25															
3	Multiply years by 12 and add to number of months.	One year, 11 months, 25 days equals 23 months, 25 days.																
4	Round child's age up or down based on the number of days as follows: • 1-15 days: round down • 16+ days: round up	23 months, 25 days would be rounded to 24 months.																
		Example 2																
5	Round the child's age for accurate plotting on the growth chart. <table><tr><th>IF plotting on...</th><th>THEN round to nearest...</th></tr><tr><td>0-36 month chart</td><td>Month</td></tr><tr><td>2-5 year chart</td><td>1/6 year (2 month increments)</td></tr><tr><td>2-20 year chart</td><td>1/4 year</td></tr></table>	IF plotting on...	THEN round to nearest...	0-36 month chart	Month	2-5 year chart	1/6 year (2 month increments)	2-20 year chart	1/4 year	<p>A 28-month old child measured with a standing height would be plotted on the line corresponding to 28 months.</p> <p>The same child would be plotted on the line corresponding to 2 year 3 months (27 months).</p>								
IF plotting on...	THEN round to nearest...																	
0-36 month chart	Month																	
2-5 year chart	1/6 year (2 month increments)																	
2-20 year chart	1/4 year																	

Calculating BMI

Purpose

Body mass index-for-age (BMI-for-age) is the recommended parameter for monitoring the growth of children 24 months and older. The data system automatically calculates BMI.

Using the calculator

To manually calculate BMI using pounds and inches, follow the steps below.

Step	Action
1	Convert any fractions to decimals. Examples: 37 pounds, 4 ounces = 37.25 pounds 41 ½ inches = 41.5 inches
2	Insert the values into the following formula: • [weight (lb) / height(in) / height(in)] X 703 = BMI Example: (37.25 lb / 41.5 in / 41.5 in) X 703 = 15.2

Note: See Policy 215.74 for decimal conversions for inches and ounces.

CDC table

A reference table for estimating BMI values for children 2-5 years can be downloaded from the CDC website at www.cdc.gov/growthcharts.

Plotting Pediatric Growth Charts

Policy	The data system plots anthropometric measurements based on the 2006 WHO growth standards for birth to < 24 months and the 2000 NCHS/CDC growth charts for ≥ 24 months for the appropriate age and sex group. This includes all premature infants who have attained a gestational age of at least 40 weeks.								
Data system plots charts	The data system will plot the pediatric growth charts automatically. These charts can be viewed and printed.								
Growth charts	<p>There are three growth charts, corresponding to the child's age and/or sex:</p> <table> <tr> <td><u>0-24 Months</u></td><td><u>2-5 Years</u></td></tr> <tr> <td>· Weight for age</td><td>· Weight for age</td></tr> <tr> <td>· Length for age</td><td>· Stature for age</td></tr> <tr> <td>· Weight for length</td><td>· BMI for age</td></tr> </table>	<u>0-24 Months</u>	<u>2-5 Years</u>	· Weight for age	· Weight for age	· Length for age	· Stature for age	· Weight for length	· BMI for age
<u>0-24 Months</u>	<u>2-5 Years</u>								
· Weight for age	· Weight for age								
· Length for age	· Stature for age								
· Weight for length	· BMI for age								
Measurements plotted	<p>There are three parameters plotted for each child:</p> <ul style="list-style-type: none"> · Length- or stature-for-age, · Weight-for-age, · Weight-for-length (for <24 months) or BMI-for-age (for ≥ 24 months). 								

Adjusting for Gestational Age for Premature Infants

Policy

Measurements will be adjusted for gestational age until the age of 2 years for:

- Premature infants (<38 weeks' gestation) who have reached equivalent age of 40 weeks' gestation, and
- Children born at <38 weeks' gestation.

Data system adjusts for age

The data system will automatically adjust for gestational age either when:

- A > 2-week difference is identified between the baby's actual date of birth and the expected date of birth that is completed on their enrollment panel or
- if on the baby's birth measurement anthro panel record, the diagnosed weeks gestation is filled in as being 37 weeks or less.

Assignment of risk for short stature

The data system assigns nutrition risk criteria for short stature for premature infants and children up to 24 months based on adjusted gestational age.

Charts for premies and VLBW/LBW infants

The data system will not plot or evaluate growth measurements for infants born prematurely (≤ 37 weeks gestation) and those who were low birth weight (5.5 lb.) who have not reached the equivalent age of 40 weeks gestation on the NCHS/CDC growth charts.

The growth of these infants may be assessed using a growth chart for low birth weight or very low birth weight infants consistent with the protocols of the local medical community where the WIC clinic operates. An example of such a chart is the Infant Health and Development Program (IHDP). The state WIC office is not providing electronic or hard copies of this chart.

Manual calculation

The table below describes how to calculate gestation-adjusted age.

Step	Action	Example
1	Document infant's gestational age in weeks.	Gestational age at birth = 30 weeks
2	Subtract the gestational age in weeks from 40 weeks (gestational age of term infant) to determine adjustment for prematurity in weeks.	$40 - 30 = 10$ weeks adjustment for prematurity
3	Subtract the adjustment for prematurity in weeks from the infant's chronological postnatal age to determine the child's gestation-adjusted age.	Chronological age today = 12 weeks $12 - 10 = 2$ weeks gestation-adjusted age

Evaluating Pediatric Growth Charts

Introduction A series of measurements is needed to accurately evaluate a child's growth. This section provides guidelines for evaluating pediatric growth charts.

Guidelines Interpret each of the three graphs after considering the information provided by the other two. If you observe any of the following growth patterns, consider the corresponding factors.

Pattern	Factors to Consider
<ul style="list-style-type: none"> Length/age \leq 2.3rd percentile Weight/age \leq 2.3rd percentile Weight/length \leq 2.3rd percentile BMI-for-age \leq 5th percentile 	<ul style="list-style-type: none"> Parents' size Recent illness Appetite Recent growth spurt Child's growth pattern
<ul style="list-style-type: none"> Stature/age \geq 95th percentile Weight/age \geq 95th percentile Weight/length \geq 97.7th percentile BMI-for-age between 85th-94th percentiles BMI-for-age \geq 95th percentile 	<ul style="list-style-type: none"> Parents' size Expected growth spurt Family stress Usual growth pattern
<p>Movement over two growth channels for any measurement</p> <p><u>Note:</u> Growth channels are indicated by the 2nd, 5th, 10th, 25th, 50th, 75th, 90th, 95th, and 98th percentile lines on the Birth to <24 months' charts. The 85th percentile appears on the 2-5 Years chart.</p>	<ul style="list-style-type: none"> Changes in environment Family history of obesity Family history of short stature Recent or chronic illness
Flat growth curve for any measurement	<ul style="list-style-type: none"> Changes in environment Recent illness Family history of short stature

Note: When discussing growth charts with caregivers, ask them if it would be helpful to go over the growth chart. Reinforce that children grow differently and at different rates and that all are normal. Focus on behaviors, not outcomes.

References

- Nutritional Screening of Children: A manual for screening and follow-up. U.S. Department of Health and Human Services Public Health Service. DHHS Publication No. (HSA) 81-5114.
- www.cdc.gov/growthcharts

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